

We Claim:

1 1. An electromechanical actuator that includes:
2 a housing having an opening passing therethrough that is centered about an
3 axis;
4 a brushless servo motor having a rotor assembly mounted inside said housing
5 for rotation about said axis, said servo and a stator encircling the rotor assembly
6 motor rotor containing a permanent magnet and said stator containing the motor
7 windings;
8 a tapered circular wedge tightly wedged between the stator and the inner wall
9 of the housing to stationarily support the stator within the housing;
10 a ball screw shaft aligned along the axis and having a tapered end that is
11 tightly secured within a complementary tapered hole in said rotor assembly so that
12 said shaft extends outwardly beyond one end of the rotor assembly;
13 a ball screw nut mounted upon the extended end of said shaft so that said nut
14 moves axially along the shaft as the shaft is rotated by said motor;
15 a pushbar unit slidably contained within an end wall of said housing said
16 pushbar unit being connected to said ball screw nut for movement along said axis,
17 and
18 control means connected to said motor for activating the motor to advance or
19 retract the push bar a desired linear distance.

1 2. The actuator of claim 1 wherein said ball screw nut contains a first
2 radially extended flange and said pushbar contains a first radially extended flange
3 and said push bar contains a second radially extended flange and further includes
4 means to connect the flanges so that the push rod moves axially with said ball screw
5 nut.

1 3. The actuator of claim 2 that further includes axially extended
2 guideways contained within said housing and bearing means associated with said
3 flanges for guiding the ball screw nut and push bar along the axis of said housing.

1 4. The actuator of claim 1 that further includes an end cap mounted
2 upon one end of said rotor assembly having an axially aligned stub shaft protruding
3 from said end cap and a resolver secured to said stub shaft for providing motor
4 position information to said control means.

1 5. The actuator of claim 1 wherein said housing contains a first section
2 and a second section that contains a necked down end that telescopes into the
3 opening of the first section adjacent to said motor stator and wedge spring means for
4 acting between the necked down end of the second section to urge the wedge axially
5 into a secure stator holding position.

1 6. The actuator of claim 5 wherein said spring means includes Belville
2 spring washers.

1 7. The actuator of claim 1 that further includes thrust bearing means
2 acting on said rotor assembly for relieving axial loads acting upon the rotor
3 assembly.

1 8. The actuator of claim 1 that further includes thrust bearing means
2 acting upon the rotor assembly for attenuating thrust loads upon said rotor assembly.

1 9. The actuator of claim 8 that further includes roller bearing means
2 acting upon said rotor assembly for attenuating radial loads acting upon said rotor
3 assembly.